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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/079,286	02/20/2002	Peter R. Jepson	06160-1P67	6625
157 7590 01/25/2007 BAYER MATERIAL SCIENCE LLC 100 BAYER ROAD PITTSBURGH, PA 15205			EXAMINER ZHENG, LOIS L	
			ART UNIT	PAPER NUMBER
			1742	

  

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/25/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/079,286	JEPSON ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Lois Zheng	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 02 November 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1, 3 and 5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Status of Claims*

1. Claims 1, 3 and 5 are currently under examination.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 1, 3 and 5 are rejected under 35 U.S.C. 103(a) as obvious over Turner US 6,331,233 B1(Turner).

Turner teaches a high purity tantalum plate at least 99.95% comprising strong (111) texture with random distribution of (100) texture with mean grain size of less than about 100 microns (Table 1, processes 8-12, claims 1-2). Processes 8,9,11 and 12 as shown in Table 1 of Turner further demonstrates mean gain size of less than the claimed 40 microns. Turner further teaches that the texture of the tantalum plate is uniform throughout the thickness of the plate(abstract, col. 2 lines 34-38).

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Regarding claims 1, 3 and 5, the tantalum plate as taught by Turner inherently has a thickness, a center and an edge. Since Turner teaches uniform texture throughout the thickness of the tantalum plate, the examiner interprets this to mean that the texture of Turner's tantalum plate is uniform in every direction from the center of the plate based on the broadest reasonable interpretation. Therefore, one of ordinary skill in the art would not have expected that the distribution of (100) and (111) crystallographic orientations in the tantalum plate of Turner would vary 30% or more across the surface of any plane or thickness of the tantalum metal plate. Furthermore, the purity and the mean grain size ranges as taught by Turner's tantalum plate either read on or overlaps the claimed purity and average grain size ranges. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed tantalum purity and average grain size ranges from the purity and average grain size ranges of Turner would have been obvious to one skilled in the art since Turner teach the same utilities in its disclosed purity and average grain size ranges.

5. Claims 1, 3 and 5 are rejected under 35 U.S.C. 103(a) as obvious over Segal 6,238,494 B1(Segal).

Segal teaches an metallic sputtering target with a minimum grain size different of less than about  $\pm 3\%$  and a dispersion in orientation content ratio of textures of no more than about  $\pm 4\%$ (abstract, claim 1) at any location of the target. Segal further teaches that the sputtering targets can be coupons(col. 5 line 45) and the sputtering targets comprise 99.95% tantalum(col. 5 lines 52-55).

Regarding claim 1, the tantalum coupon as sputtering target as taught by Segal reads on the claimed refractory metal plate comprising a thickness, a center and an edge. In addition, it is examiner's position that the tantalum target of Segal would inherently have a distribution of claimed {100} and {111} crystallographic orientation. Since Segal teaches that the dispersion in texture orientation content ratio is no more than about  $\pm 4\%$  at any location of the target, the examiner asserts that the distribution of {100} and {111} textures orientation in the tantalum sputtering target of Segal meets the limitations of varying by less than 30% both across any plane being orthogonal to the thickness metal plate and across any thickness of the metal plate.

Furthermore, Segal teaches that the sputtering target comprises 99.95% tantalum, which is very close to the claimed 99.99% tantalum. Therefore, one of ordinary skill in the art would have found it obvious to use claimed 99.99% tantalum in forming the target of Segal with expected success since 99.95 and 99.99% tantalum are both high purity tantalum and would inherently have similar properties and behaves in similar fashion under same processing conditions.

Regarding claim 3, Segal further teaches that its sputtering target have an average grain size of 6 microns(claim 18), which meets the limitation of the claimed average grain size of less than 40 microns.

Regarding claim 5, Segal teaches that the sputtering target comprises 99.95% tantalum, which is very close to the claimed 99.999% tantalum. Therefore, one of ordinary skill in the art would have found it obvious to use claimed 99.999% tantalum in forming the target of Segal with expected success since 99.95 and 99.999% tantalum

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are both high purity tantalum and would inherently have similar properties and behaves in similar fashion under same processing conditions. In addition, it is always desirable to use higher purity material to achieve optimum sputtering target.

***Response to Argument***

6. Applicant's arguments filed 2 November 2006 have been fully considered, but are not persuasive.

After careful review of applicant's 1.132 Declaration filed 15 March 2005, the examiner changes her position on this declaration and now considers this declaration not sufficient to overcome prima facie case of obviousness established by Turner.

In the instant specification, applicant alleges that the second deformation step of Turner by upset forging is what causes a variation in texture orientations(see page 3 paragraph 8). Applicant also uses upset forging in the second deformation step in preparing the tantalum plate discussed in the 1.132 Declaration filed 15 March 2005. However, the examiner does not find anywhere in Turner the disclosure of using upset forging in its second deformation step. In fact, Turner does not specifically mention the type of deformation preferred in its second and third deformation steps. The only teaching of different deformation techniques, such as forging, rolling and extrusion, as taught by Turner are associated with the first deformation step(col. 3 line 49 – col. 4 line 26). Therefore, one of ordinary skill in the art would have interpreted the second and third deformation steps of Turner to include forging, roller or extrusion, as accepted by its first deformation step. Since applicant's second upset forging deformation step used in the Declaration is not consistent with the teachings of Turner, the examiner does not

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consider that the tantalum plate discussed in the Declaration is prepared in accordance with Turner and applicant's declaration is not persuasive.

In addition, applicant's Declaration only demonstrated on a tantalum plate that is formed under specific operating conditions, such as reduction ratio, strain %, annealing temperatures, that fall within the disclosed operating condition ranges of Turner.

Therefore, the tantalum plate discussed in the Declaration is only an embodiment of Turner's invention and does not limit the scope of Turner. Applicant has not provided sufficient evidence demonstrating that tantalum targets produced by the entire processing scope of Turner would produce texture variations that are different from the claimed invention.

Finally, the examiner considers that the scope of Turner sufficiently encompasses the instantly claimed invention. However, the applicant has not shown the criticality of the claimed limited {100} and {111} crystallographic orientation variation of less than 30%.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LLZ

ROY KING  
SUPERVISORY PATENT EXAMINER  
FEB 14 2017 10:00